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ALICE TEICHOVA

INTERNATIONAL CARTELS AND THE CHEMICAL INDUSTRY THE PRE-MUNICH CZECHOSLOVAKIA 1

The history of the modern chemical industry offers a striking example of the close interrelationship between scientific and technical achievements and the production process and economic development. Due to the key position that the chemical industry occupies in modern times, the study of its organization and economic policy can also contribute to the clarification of general historical questions.

The rise of chemical production in the second half of the 19th century was mainly due to the fact that basic chemicals such as acids (sulphuric, hydrochloric, nitric acid, etc.) and alkalis (soda, potash, etc.) were being used in ever greater quantities by other industries. The situation was similar with the production of synthetic dyes and medicines. With the introduction of scientific methods in agriculture, the production of artificial fertilizers also began. At the beginning of our century, the problem of extracting nitrogen from the air was solved, an invention that was of crucial importance for the mass production of artificial fertilizers as well as explosives. Scientific chemistry penetrated the food industry and also led to significant upheavals in the processing of vegetable fats and mineral oil. In the first decades of the 2.0 century, the chemical industry developed a new approach to the extraction of nitrogen from the air. **At the beginning of the 20th century, plastics and plastic fibres, industrially produced liquid fuel from petroleum, coal and other raw materials entered the world market and this heralded that chemistry would not only be limited to the production of chemicals for other industries, but was at the same time on the way to becoming an independent a**

The large chemical companies arose and developed out of and parallel to scientific and technological progress and soon found themselves at the head of international trusts and cartels. The beginnings of monopoly formation and cartelism in the Czech Republic can mostly be traced back to production methods and prices or to sales interests in relation to certain specialised products. In somewhat simplified terms, it was basically alkalis at Solvay et Ge., artificial dyes at the two predecessors of IG Farben and explosives at Nobel that began their rise to chemical world powers. It is in the inherent cha-

1 **This article grew out of a short lecture I gave at the joint annual meeting of the German Society for the History of Medicine, Natural Sciences and Technology and the VDI Main Group for the History of Technology in Nuremberg in 1967. It is based on research work undertaken in Czechoslovakia in preparation for a monograph.**

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The characteristics of chemical production as well as the expansive power of the capitalist mode of production meant that the chemical companies expanded their production programs and thereby competed with each other. This increased the tendencies towards concentration and cartelization, towards a certain division of labor and towards the demarcation of spheres of interest between the largest chemical companies, often through very complex and mostly opaque mutual capital participations and especially cartel agreements. Any attempt by the economic historian to research the pre-war situation in this area can, at best, reveal a certain small part of the economic-historical reality. However, in the light of the growth of the large supranational economic units of the present, the scientific investigation of their past can be of more than just academic use.

In the leading industrial countries, the chemical industry after the First World War was generally controlled by a narrow circle of corporations, sometimes by just one producer2• The headquarters of these corporations often had mutual interests in their capital. A certain picture of the complicated structure and the wide ramifications of the largest chemical corporations is provided by the vivid representations of the capital interests of IG Farbenindustrie AG and Imperial Chemical Industries in the second half of the 1920s, which were submitted as expert reports to the North American government commission in the course of the work of the Temporary National Economic Committee (TNEC)3• At the same time, the leading chemical corporations achieved considerable control of the world market by concluding comprehensive contracts affecting numerous groups of chemical products, so that a few, sometimes only bilateral alliances, broadly cartelized the main areas of chemical production.

On the one hand, due to traditional cooperation in patents, exchange of experience in technology and permanent trade links, and on the other hand due to constantly increasing competition, the American concern EI du Pont de Nemours & Co. (hereinafter du Pont) and the British concern Imperial Chemical Industries Ltd. (hereinafter ICI) decided in 1929 to territorially divide the world market for essentially all of their chemical products, with both partners recognizing the validity of far-reaching similar agreements between ICI and the German IG Farbenindustrie AG (hereinafter IG Farben) and between ICI and the Belgian company Solvay et Cie. (hereinafter Solvay). The terms of the contract also included clauses on the exchange of technical information and patents and on joint scientific research for the exploitation and dissemination of patents.

In this way, an interesting contradiction arose in the activities of these cartels,

1 .This was also the case in the chemical industry of Czechoslovakia, where one concern, the Association for Chemical and Metallurgical Production in Usti nad Labem (Aussig on the Elbe), controlled practically the entire industry.

[1] **Temporary National Economic Committee (TNEC), Hearings, Part 25, Exhibit No.** 2,083 **and Exhibit No.** 2086, **Washington DC** 1941.

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supported and financed scientific research to promote the dissemination and use of chemical products and the invention of new substances for joint introduction into the production process, but at the same time sought to ensure that newly developed or invented production methods should not be used if this would lead to price reductions or profit reductions. At the same time, i.e. in the decade before the Second World War, extensive cartel agreements existed between du Pont, ICI and IG Farben, as well as between IG Farben and the Standard Oil Co. in the USA on the secrecy of patents and technological processes and particularly strict rules on production restrictions. In the 1940s, these cartels were sharply attacked by American economists, and the US government's investigative commission brought evidence against I. G. Farben's cartel policy, which was therefore deliberately pursued in favor of Hitler's war preparations.4 The worldwide cartel agreements of the most powerful corporations, which covered almost all basic chemicals and their by-products, were followed by further cartel agreements with other less influential chemical corporations and companies. In addition, numerous special contracts were concluded between the largest producers of synthetic dyes and other plastics, explosives, pharmaceuticals and other chemical products. In this way, national and international cartels of varying effectiveness and duration arose and multiplied, which, with many variations, moved along a line between an effective monopoly and a loose convention that temporarily collapsed. Thus a network of cartel relations developed with a confusing series of superior and subordinate links, reminiscent of the feudal relationships of the vassal system, and just as difficult to unravel. However, it is quite clear that the international cartelization of the chemical industry made it difficult for those chemical companies that tried to maintain an independent production and trade policy to develop. On the other hand, membership in cartels gave companies access to the latest technology in many cases and enabled them to reduce production costs, increase labor productivity in their plants, and increase their profit potential.

As the international effectiveness of the cartel associations in the chemical industry grew, this phenomenon was characterized by the fact that the interstate conditions of the cartels almost completely escaped the control of the individual governments, although their impact on the national economies of the countries concerned could not be insignificant. The extent of the influence of international chemical cartels on production volumes, prices, sales opportunities, domestic and foreign trade statistics in the individual national economies is difficult to determine, since

' See especially the monographic works of the investigating judges and experts in the TNEC: CD Edwards, Economic and Political Aspects of International Cartels, Monograph No. r, US Senate, Committee on Military Affairs, 5ubcommittee on War Mobilization, Washington 1944; \'<'endell Berge, Cartels, Washington 1946; J. **Borkin and CA Welsh, Germany's Master Plan, London, New York, Melboume.**

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Chemical products in international cartel agreements with Czechoslovak participation (192 5/26-1938 / 3 9)

product	Country of origin of the contracting parties outside the CSR	duration of the Cartel-contract
formic acid	Germany	1933-1938
ammonia	Germany	1935-1938
ammonia and byproducts	Belgium, Austria, Romania, Yugoslavia	1933-1937
ammonium carbonate	Germany	1930-1940
anthraquinone	Germany	1933-1941
white lead	International White Lead Convention	1934-1939
Calgon	Germany	1936-1938
chemicals (phosphorus products and artificial fertilizers)	Austria	1936-1945
Chemical products other than soda and soda products	Belgium	1908 **for an indefinite period** 1937-1938
sodium chloride	International Convention for Sodium Chloride	
Cyan salts (cyanuric acid, prussiate salts, blue stain, etc.) from calcium	Germany	1925–1935
cyanamide ferrosilicon	International Ferrosilicon Syndicates	1933–1938
Refractory magnesite products	Austria, Germany, Great Britain	1929–1946
Fluorine products	Germany	1933-1938
Potassium dichromate and sodium dichromate	Germany	1934-1939
Potassium hypochlorite, sodium hypochlorite, Neamoscan, Veloxiol, Flavol and Trifi.rmin against rust	Germany	1933–1937
Potassium permanganate, sodium permanganate,	Germany	1933–1938
calcium permanganate	Poland, Austria, Hungary	1930-1938
Calcium cyanamide	Italy	1928-1938
Calcium carbide, calcium cyanamide	EPIDOS - International Bone Glue Cartel	1926-1940
Bone glue and products of the bone glue industry		

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codeine, opium alkaloids	**International Morphine and Codeine Convention**	**1933 -unlimited validity**
cocaine	**International Cocaine Convention** 1932-1943	**Austria,**
synthetic resin	**Germany**	**1938- 1 year**
artificial horn	**International Artificial Horn Cartel** 1929-1937	
Artificial sweeteners	**International Saccharine Cartel**	1930-1938
sodium perborate	**Germany**	1933-1939
sodium peroxide	**Germany**	1933-1943
oxalic acid	**Oxalic Acid Convention (Germany)**	1937-1939
hydrochloric acid, sodium	**Austria, France**	1925-1935
sulfate, sodium sulfide (sodium sulfide)		
Acid-resistant earthenware	**Germany**	1933-1941
	France	192.8-1935
Sulphuric acid	**Poland**	1933-1938
Sulphuric acid Sulphuric acid,	**Germany**	1934,
alumina hydrate,		1935-1939
aluminium hydroxide, aluminium		
sulphate, aluminium oxides		
and aluminium	**European Nitrate Fertilizer Cartel** 1932-1939	
salts Nitrogen	**European Nitrate Fertilizer Cartel** 1934-1939	
fertilizers Nitrogen	**Germany** 1930-1938	
fertilizers Nitrogen		
	Germany	1933-r937
products for	**Italy**	1934-1935
technical purposes Sulfates	**Germany**	1933-1939
Superphosphates Titanium	**France**	1926 **to**
white and		.20 **years**
titanium dioxide Titanium colours,	**Germany**	192.1-1937
zirconium,	**Austria**	1933-1942.
monoxide sand Earthenware for chemical purposes Trichlorethylene	**Austria, Germany**	1930-1939
Hydrogen peroxide for technical and medical purposes Hydrogen peroxide	**International Hydrogen Peroxide Convention**	1933-1938
hydrogen peroxide	**International Hydrogen Peroxide Convention**	1935-1939
hydrogen peroxide	**International Hydrogen Peroxide Convention**	1935-1946
bismuth	**International Bismuth Cartel**	1933-1939
bismuth products	**International Bismuth Cartel**	1933-1938
tin chloride	**Germany**	1911-1939

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reliable data are usually completely inaccessible. However, information on the activities of many cartels is often available in the archives of the central bureaus of international cartel organizations, which kept accurate records, collected and disseminated information, and often undertook advanced market research for their governing bodies. In this article, we would like to point out some aspects of the economic influence of international cartels on Czechoslovakia's chemical production using previously little-known archive material; because the classification of the Czechoslovak chemical industry must be viewed against the background of the world cartel structure and as a part of it.

Compared to other advanced industrial countries, the economic weight of the chemical industry in relation to total production in Czechoslovakia was relatively lower6• Nevertheless, chemistry was one of the most important industries in Czechoslovak economic life and, along with the steel and iron industry, was the most concentrated branch of industry, which was practically dominated by one concern - the Association for Chemical and Metallurgical Production in 0sti nad Labem (Aussig) (hereinafter the Aussig Association), the largest chemical works in Central Eastern and Southeastern Europe. Apart from its own group plants, around 150 cartel agreements linked almost all chemical plants and factories in Czechoslovakia to the Aussig Association6• This number does not include international cartel agreements.

According to my calculations, which are based on the data from the Czechoslovak cartel register in the Prague State Central Archives, 74 valid international agreements were concluded in the chemical industry between 1926 and 1938 , covering 56 groups of chemical products, including basic chemicals such as soda, nitrogen, superphosphates, explosives, tar and mineral dyes, hydrogen, etc. The most frequent Czechoslovak cartel partner was the Ústí nad Labem Association, which signed 80% of all international agreements of the Czechoslovak chemical industry7. The most frequent foreign cartel partners were German chemical companies, which concluded 60% of all international cartel agreements with the Czechoslovak chemical industry8.

Since the majority of the most important cartels were administered by the Ústí nad Labem Association, there were significantly fewer special cartel companies in the chemical industry than in other less concentrated industries in Czechoslovakia. Three cartel organizations can be cited as relatively representative and effective; they were registered as limited liability companies but only acted as sales outlets for their cartel members:

1 See J. Vachcl, Postaveni ceskoslovenskeho hospodafstvf ve svete v letech 1918-1945 (The situation of the Czecho-Slovak national economy in the years 1918-1945), Material for discussion, No. 4, Prague 1967. • Calculated according to the Cartel Register in the State Central Archives, Prague (Stätni ustfedni archiv - hereinafter SÜA). • Calculated according to the Cartel Register (hereinafter KR).

1 Calculated according to the information in the SÜA-KR.

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Plate No. J

International Nitrogen Association Ltd., London (Trustees)	Dutch group Staatsmijnen in Limburg 8.29°io EE	Norwegian group Norsk Hydro Elek- uisk K vaclstofakt., Oslo 70fo the DEN quota	Anglo-Chilcan Nitrate Corp. 26¾ of Chile Expon
Convcntion International de l'Azote 79,623°io from W"eltexpon	Polish group Comite Polonais d'Azote, Oiorzow 2.9° 1o EE	Imperial Chemical Industries, London zo°lo the DEN quota	Other companies *1'to* from Chile Expon
arbitration Committee	Swiss group Louna electricity works and bronze. Fbk.n. 2, 1 8°1o EE	1. G. Colors Industry, Frankfurt am Main	Lautaro Nitrates Companr 36° / o of Chile Export
International Gesellschaft der Stickstoff-Industrie AG, Basel Sales Office	Italian group Montecatini, Milano 2.07°io EE	Economic Association of German Gasworks Gascoke Syndicate, Berlin	Compania Salitrora de Tarapaca y Antofegas P° io of Chile Expon
French group Comptoir de l' Azote	Czech Group Sdruicnf pro prodej dusi- k:I.tych latek, Praha o.6z°lo EE	German calcium cyanamide powder	Ailied Chemical & Dyc Corporation USA
DEN Group 73,580/ o of Eur. Export		British group British Sulphate of Ammonia Federation All other British producers	Mitsui Japanese Federation for ammonium sulfate Barrett Company U.3.A.
Belgian group Fcderation Beige of the producer d' Azote, Bruxclles 10.36°/0 EE	Deutsche Gruppe Stickstoff-Syndikat GmbH, Berlin *n° lo* of the DEN-Ouote	Corporacion de Ventas de Saltire y Y odo de Chile 20.377 °1o from Worldcxpon	distribution monopoly for nitrogen products

Source: compiled by Kanellveruägcn, SÜA-KR, 246/5 and 689/4 - 15. 7. 1938 Explanations and abbreviations:

controlling influence or equity interest

1-lit membership or sales office of the cartel members

cartel agreements beueffs market sharing

DEN ÿ Germany, England, Norway EE = European Expon

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Sdruzeni pro prodej dusikatych litek, s. s ro, Praha (Nitrogen Sales Association Ltd., Prague), Fosfa, spolecnost pro obchod vyrobky chemickeho prumyslu, spol. s ro, Praha (Fosfa, the superphosphate syndicate of Czechoslovak plants), and Acetic, spol. s ro, Praha (Acetic GmbH, Prague - tar paper cartel). The offices of these cartels mainly regulated exports, imposed quotas on the domestic market and represented the Czechoslovak side in international cartel negotiations. The diverse interweaving of domestic and foreign cartel agreements and the large number of cartelized individual products and groups of products characterized the chemical industry of the Czechoslovak Republic to a similar extent to that of other advanced industrial countries. In order to provide a better overview, I list in Table 1 in alphabetical order those chemical products that became the subject of international cartel agreements with Czechoslovak participation.

At the same time, the table contains information on the countries of origin of the foreign cartel partners and on the duration of the individual agreements. This provides a more accurate picture of the connections between Czechoslovak chemical cartels and foreign partners on the eve of the Second World War.

Table 1 shows that the chemicals essential for industrial production were almost without exception included in the sphere of interest of international cartels. For approximately a quarter of the cartelized products produced in Czecho-Slovak chemical plants, the Czechoslovak producers belonged to multilateral international conventions, syndicates and other cartel associations; however, for the vast majority of products, the Czechoslovak chemical plants fell - mostly through contractual agreement between the strongest cartel partners - into the sphere of influence of the German members of international chemical cartels.

Table No. **1** also shows that approximately half of the cartelized products mentioned were regulated by bilateral Czechoslovak-German agreements, most frequently between the Aussiger Verein and IG Farben and the group plants subordinate to them. Cartel agreements were usually the result of fierce price wars or stubborn legal disputes over patents, a kind of truce in the economic war. The pressure of German chemical cartels on the Czechoslovak chemical industry increased particularly in the period from 1933 to 1938. This can be amply documented by the complicated course of negotiations preceding the conclusion of the contracts and by the content of many agreements on production cessations or restrictions, on changes in production programs or on the sales markets of Czechoslovak plants and their German competitors, who were gaining in strength and power. It is not possible to analyse all contracts exhaustively here, not only because of lack of space but also because - as my research shows9 - similar situations are repeated with different products. Therefore, I would like to draw the attention of the

• See Alice Teichova, An Economic Background to Munich : International business and Czecho-Slovakia 1918-1939 (in press).

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reader's attention to some of the most important and effective of these cartel agreements, which clearly express general trends in the period under discussion.

In the cartelization of the chemical industry, nitrogen products in particular occupied a significant place due to their extraordinary importance in agriculture and explosives production. Originally, in the 19th century, natural Chilean saltpeter dominated the world market, which was exploited by British and North American capital. At the beginning of the 20th century, ammonia extraction from the air was invented in Germany and in 1913 industrial production began at Badische Anilin AG (later IG Farben) using the Haber-Bosch process. When the German patent rights expired after 1927 , the Haber-Bosch process became indispensable for the chemical heavy industry everywhere10.

This triggered fierce competition between the world's largest chemical companies, which was further exacerbated by competition from natural products from Chile. The first attempt at an international cartelization of nitrogen production was successful in 1929, when the Convention Internationale de }'Industrie de l' Azote was founded with the Chilean producers. After several unsuccessful agreements, a solid core of the cartel was formed in Europe with ICI for British nitrogen production, the Nitrogen Syndicate, a group company of IG Farben, for German production, and Norsk Hydro Elektrisk Kvaelstofaktieselskab for Norwegian production. These three large producers joined together in 1930 to form the so-called DEN Group (Germany, England, Norway) in a basic cartel and then drew other European states into the cartel in order to limit their production, increase prices and divide up sales areas.11• The Czechoslovakian Aussig Verein was included in the international cartel in 1930 through a cartel agreement with the Nitrogen Syndicate in Berlin regarding nitrogen products for technical purposes.111• According to the agreement, which was valid until 1938 , the Czechoslovakian factories undertook to export their goods exclusively through the Nitrogen Syndicate, except for a small, precisely specified quantity to strictly defined areas of the succession states. The Aussig Verein was made responsible to the Nitrogen Syndicate for the price, quality and weight of the goods; the association could only set domestic prices, but after consultation with the Berlin Syndicate. Its production over and above its own requirements was reduced by about one fifth, which means that its production capacity of 1,400 tons of nitrogen after deducting its own consumption was reduced to 1 qot. Of this amount, the Aussiger Verein was allowed to export specified nitrogen products with a nitrogen content of 190 tons to Hungary, Romania and Yugoslavia, and 8 tons to Austria18• All orders from Central and Southeastern European countries to Czech

10 See Alwin Mittasch, History of Ammonia Synthesis, Weinheim 195 1.
11 See Ervin Hcxner, International Cartels, Chapcl Hili 1 946, p. 326; also \X'endell Berge, op. cit., p. 2.41.
12 SÜA-KR, 381/1, I. 8. 1930-1. 10. 1938. u In
a supplementary agreement of April 21 , 1938 to the original cartel, this quantity was reduced to 800 t and the permitted export quantity to the successor states to 150 t. See SÜA-KR, 385/2.

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Choslovakian plants that exceeded the permitted export quotas were to be forwarded to the Nitrogen Syndicate in Berlin. The nitrogen syndicate was granted the right to sell on the Czechoslovak domestic market, especially for supplying companies in the territory of the (:SR, which did not want to buy from Czechoslovak factories. At the same time, IG Farben was given special permission to sell sodium nitrite directly to dyers and printers in Czechoslovakia in unlimited quantities. The tangible intervention of this international cartel also lay in the obligation imposed on the Czechoslovak partner not to manufacture or sell nitrogen products for technical purposes in the Czechoslovak Nitrogen Works AG in Ostrava (then Moravska Ostrava = Moravian Ostrava), with the exception of NH3 deliveries to the Semtin Explosives Company and NH3 deliveries to the Moravian-Ostrava Chemical Works GmbH in the form of liquid anhydrous ammonia14, i.e. to its own Group plants. A representative of the German chemical industry, Dr. Ungewitter, was appointed to oversee compliance with the contractual clauses, the confidentiality of which was particularly emphasized. In this way, the German nitrogen cartel secured a path to the south-eastern European sales areas, penetrated the Czechoslovakian domestic market, and had a decisive influence on the production volumes of the Czechoslovakian plants.

In the area of nitrogen production for artificial fertilizers, the Czechoslovak chemical industry offered a certain amount of resistance for some time. The cartel agreement of July 7, **1930** between the Aussig Association and the Polish, Austrian and Hungarian chemical industries on the sale of artificial fertilizers can be seen as a kind of defensive measure16. Among other things, the Hungarian cartel partner, "Nitrogen" Artificial Fertilizer and Chemical Industry AG, Budapest, renounced any share of the Czechoslovak market in return for a lump sum from the Aussig Association. The quota allocation for the sale of calcium cyanamide on the Czechoslovak market, which is shown in the following table No. z. and was also valid on the so-called reserve markets in southeastern Europe, proves the leading position of Czechoslovak artificial fertilizer production in this area at that time.

Table No. 2 Participation in the nitrogen quota for the sale of calcium cyanamide in the (:SR and reserve markets16

cartel partner	Nitrogen quota in % **8**
Aussiger Verein (LSR)	**2.70**
Panstwowa fabryka zwiazkow azotowych, Chorzow (Poland)	10,25
Stickstoffwerke AG Rusche, Vienna	7,05
	1 00.00

" SL'A-KR, 385.
11 SLA-KR, 219/1, I. 7. 1 930.
11 Ibid., July 1 , 1931.

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The precondition of this agreement was that imports of calcium cyanamide in any form into the Czechoslovak Republic by German factories were to be completely excluded, since there was a mutual market protection agreement between the Bavarian Nitrogen Works on the one hand and the Czechoslovak, Polish, Austrian and Hungarian cartel partners on the other. However, the Czechoslovakian priority in artificial fertilizer production in the area of the former Austro-Hungarian monarchy soon became untenable.

In June 1932, the Czechoslovakian artificial fertilizer producers, who had formed a national cartel in the Nitrogen Sales Association G. mbH, were incorporated into the DEN group of the International Nitrogen Cartel17. The position of Czechoslovakian production in relation to the other national groups in the global nitrogen cartel can be seen in Table No. 3. With a quota of 0.62% of European sales, the Czechoslovakian group occupied the last place among the cartel members. The essence of the cartel agreement is expressed most clearly in a letter dated October 25, 1933 from the Nitrogen Syndicate in Berlin on behalf of the German, English and Norwegian groups to the Nitrogen Sales Association in Prague, which confirms the conclusion of the contract on artificial fertilizer exports dated July 6, 1932: »

... This export is to be carried out exclusively by us or our partners; you undertake not to offer, sell or deliver artificial fertilizers outside the customs territory of Czechoslovakia, either yourself or through other persons.18 To the extent that Czechoslovak production could not satisfy the country's own needs, the Czechoslovak market had to be supplied exclusively by the nitrogen syndicate and the Czechoslovak contracting partner was to seek duty-free import for these deliveries. It is noteworthy that a private contract with foreign companies contained a requirement that affected Czechoslovakia's state revenues. This agreement was extended in 193419 and in 1935 the Dutch and Belgian groups joined, which, together with the DEN group, redistributed the world's sales areas, reduced export quotas and introduced a complicated system of compensation payments for underproduction and fines for overproduction20 . As a total result of these agreements, the export of artificial fertilizers from Czechoslovakia was practically stopped and sales volumes for the domestic market were controlled by the Berlin Nitrogen Syndicate. The International Nitrogen Cartel undoubtedly subordinated Czechoslovak production in this area to the sphere of interest of the German Nitrogen Syndicate, and thereby to the German IG Farben.

In 1935, the Stickstoff-Syndikat G. mb H., Berlin, intervened in the Czechoslovakian export business with sal ammoniac stones and finely crystallized sal ammoniac. In its cartel agreement with the Czechoslovakian Chemische Fabrik, Blumberg & Rinds-

" **SÜA-KR,** 246/1, 2, 3, 6. 6. 1 932-3. 10. 1939.

1• SÜA-KR, 246/1, 6. 6. 1932-30. 3. 1934.

10 **SÜA-KR,** 246/2, p. 3. 1934--1. 7. 1 9;i.

20 **SÜA-KR,** 246/3, 1. 7. 193) - **terminated by telegram** from the **Norwegian group,** 3. 10. 1939.

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kopf, Cukrnantl, the latter undertook to reduce its export of sal ammoniac stones to a fixed quantity of 12,000 kg and to sell these only at the prices of the Nitrogen Syndicate21 ; **however, it completely renounced the export of 99/100% finely crystallized sal ammoniac** and **left to the Nitrogen Syndicate its export quota of** 360 **t per year at the average net proceeds achieved by the Syndicate, less** *2.* **% for sales expenses. The Czechoslovakian company was only** allowed to continue to sell 30 **t of this product in Austria itself22• For the years 193 6-193 7, the Czechoslovakian export quota to the Nitrogen Syndicate was reduced to** 2.40 **t when the contract was extended, and in the second half of 1937 it rose again to the previous quantity; However, the company in Cukmantl was asked to give up its exports in return for compensation of** 2.0% **of the average net revenue23• With each contract renewal, the cartel partners increased the prices of the contract products.**

Another basic chemical in the system of the interwar cartels was hydrogen peroxide, which is used in industry as a bleaching agent and in medicine as a disinfectant. The aim of the International Hydrogen Peroxide Convention was to dominate the world market. The head of the North American Antitrust Department, Corwin Edwards, accused this international cartel of using patents to prevent new companies from entering production. The contract between the Aussiger Verein and the International Hydrogen Peroxide Convention fully confirms this activity of the cartel.26 When the Czechoslovak chemical industry joined the International Hydrogen Peroxide Convention, tripartite agreements were signed between the Deutsche-Gold-und-Silber-scheideanstalt, Frankfurt - also a subsidiary of 1. G. Farben and at the same time the managing body of the cartel, the Aussiger Verein and the Moravian-Ostrauer Chemischen Werke. In it, the Moravian-Ostrove Chemical Works committed themselves not to complete their hydrogen peroxide plant, which was under construction, and to refrain from any direct or indirect activity in the production of hydrogen peroxide for the next 15 years. In return, they received one million Czechoslovak crowns from the convention. At the same time, the Ústí nad Labem Association was required to refrain from any export of hydrogen peroxide until 1937, and to strictly limit the export quantities that the Ústí nad Labem Association was to be permitted to export after 1937.

11 The export of 120,000 **kg of ammonium chloride was divided as follows:** 45,000 **kg to British India,** 30,000 **kg to Egypt,** 25,000 **kg to European Turkey,** 5,000 **kg to Palestine,** 10,000 **kg to Syria and** 5,000 **kg to Greece. See SÜA-KR,** 749/1, 25. 1. 1935. **and SÜA-KR,** 749/1, 25. 1.

1935. :i:i **SÜA-KR,** 749/3, 1. 1.

1936 **and** 749/4, **15.** 7. 1937. **and CD Edwards, aa 0., p.**

3 8.

II **SÜA-KR,** 776/1, 7. 3. 1935-31. 12. 1 939. :e

SÜA-KR, 788/1, **13.** 2. 1 935. **The German Gold and Silver Refinery was closely connected with IG Farben and Siemens** & **Halske; cf.** J. **Bork.in and CA Welsh, op. cit., p. 116.**

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he had to have it sold through the convention. In addition, sales in Czechoslovakia were split equally between the Aussig Association and the convention for 1935, with the promise that the association's share of the Czechoslovak domestic market would increase to n% in 1936 and that of the convention would decrease to 25%. The Aussig Association also committed itself in the cartel agreement not to grant licenses for its process to companies at home or abroad, to prevent those companies in which it had a significant share from engaging in hydrogen peroxide production, and to use its influence with other companies to prevent it and the convention from becoming competitors. This agreement remained valid until the end of 193927• German-Czechoslovak cartel agreements concerning other chemicals mostly contained agreements on the extensive exchange of trade secrets28, on the admission of representatives of the German partners to confidential documents and business books of the Czechoslovak cartel members29• The possible political consequences of these cartel conditions at a time when the Nazi government in Germany was preparing to invade Czechoslovakia cannot be ignored. Similar to the International Nitrogen Cartel, other international chemical cartels also included Czechoslovakia in the German sphere of influence. In the International Bismuth Salt Convention, in which German, English, French and Dutch companies participated, the Czechoslovakian plants were included in the German group30. The International Titanium Cartel gave the German Titangesellschaft mbH, Leverkusen, which was associated with IG Farben, the entire Czechoslovakian market31. In the cartel agreement of 1933 with the Aussiger Verein, which was valid until 1 945 , the Titangesellschaft, Leverkusen, received 72 % of the annual sales in Czechoslovakia82 . Between the contracting parties, ie the Aussiger Verein, the Titangesellschaft and IG Farben, the mutual free use of patents as well as the communication and exchange of experience on the entire patent field were also provided for until 1 939. A representative from Düsseldorf, the former district judge Dr. Frech, was appointed to monitor compliance with the cartel conditions33•

" SÜA-KR, 776/1, 1. 1. 19n-31, 1 2. 1939 . .a

SÜA-Kil, e.g. 386/1, 5u8/ 1 and many

others. •• SÜA-KR, e.g. 38i/1, 2.46/1, 2., 3, and many others

80 "This country (ie Czechoslovakia - AT) is considered as being part of the German Group's territory." From the English text of the International Bismuth Salt Makers Convention, July 10, 1928-31. 12. 19;8.

11 IG Farbenindustrie and EI du Pont de Ne-mours & Co. were involved in Titangesellschaft mbH, Leverkusen. The American-German combination dominated the world market for this valuable product. Titanium is an important component in the production of paints, artificial rubber, glass, paper and enamel. See Wendell Berge, op. cit., pp. 124-141.

Il SÜA-KR, 568/1, November 2, 1933-17. 8. 1945.

11 Ibid.

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The content of effective cartel agreements cited here shows the manner in which international cartels, especially German ones, intervened in the chemical industry of Czechoslovakia, whereby the leading role of IG Farben in the advance of the cartels cannot be doubted. In the economic history literature it is generally assumed that IG Farben was a major shareholder in the Czechoslovak Association for Chemical and Metallurgical Production in Ústí nad Labem on the Elbe between the two world wars, i.e. before the Munich Agreement of 193834. This assumption does not correspond to historical facts, although the Ústí nad Labem Association was strongly influenced by the German chemical industry and above all by IG Farben, particularly in the technical field and precisely through cartel connections. IG Farben gained capital shares in several chemical plants in Czechoslovakia35, but the path to a direct stake in the largest chemical company in Czechoslovakia, the Aussiger Verein, remained closed to it before Munich and before the German occupation of Bohemia and Moravia.

While German chemical companies exerted their influence on Czechoslovakian chemical plants before 198-1939 mainly through cartels, the powerful chemical companies of Western Europe had penetrated the chemical industry of the (;SR after the First World War not only through cartels but primarily through significant capital investments. Approximately 33% of the share capital in the Czechoslovakian chemical industry - excluding the mineral oil and vegetable fat industry, 97% of which belonged to foreign companies - was in foreign hands in the 1920s and 1930s, of which Belgian, British and French shareholders were in the top three places36• Belgium took first place, through the significant capital investments of Solvay et Cie. in the Aussiger Verein and its group plants; the British and French capital was largely linked to the capital investments of ICI and the Societe Centrale de Dynamite in the Czechoslovak chemical industry. Explosives industry37• The historical roots of the prominent Belgian influence go back to the introduction of ammoniacal soda production in Austria-Hungary, when Solvay established close relations with the Aussiger Verein as early as the 1880s38• The path of cooperation led from patent and licensing agreements

N Compare e.g. BG \V. Stocking and M. \V. Watkins, Cartels in Action, New York 1 947, p. 431.

16 Joint-stock company for the processing of caustic potash in Kolin; Bentlins chemical factories as Bentlins chemical factories AG, Pereijen in Uzhorod; Hydroxygen as; Keramicke-chemicke zavody as dr. Dr. Allers und Heller (Ceramic-chemical works AG, formerly Dr. Allers and Heller), Prosetice.

11 **See Alice Teichova, op. cit.**
11 Ibid.

38 For the history of the Ústí nad Labem Association, see 100 years of the Association for Chemical and Metallurgical Production in Ústí nad Labem (100 years of the Association for Chemical and Metallurgical Production in Ústí nad Labem), Üsti n. L. Novak, Vysoka h.ra (High Game), Ustl nad Labern 1966.

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contracts on cartel agreements that were valid from 1906 to Solvay's capital participation in the Aussig Verein after 1918, ie after the creation of the independent Czechoslovak Republic. Solvay's technical and commercial interests were mainly concentrated on alkalis. Precise regulations on technological development, prices and the division of sales markets between the most powerful chemical companies in the world enabled Solvay to exert its influence on the Aussig Verein and thus on the entire Czechoslovak chemical industry to a much greater extent than could have been concluded from its capital participation alone.

Both groups founded a number of soda factories in central and southeastern European countries, with Solvay always being the majority partner (either 5 1 : 49 or So : 2.0). In connection with its capital participation, the Solvay group strictly controlled the production program and the chemical-technological processes in the joint plants and also in the Aussiger Verein. Naturally, the Aussiger Verein was able to expand its sphere of interest through its joint ownership of Solvay plants in central and southeastern Europe and share in their profits, but its decision-making power was strictly limited and it remained in a subordinate position in relation to Solvay. This situation was clearly expressed when Solvay formed a community of interests with ICI in 1932, in which the exchange of technical experience and impr Stocking and Watkins, referring to this agreement, state that in the 1930s there was a deepening of relations between Solvay, the Aussiger Verein and ICI, which concluded a cartel agreement on the division of markets and the exchange of technical experience and patented licenses39• However, as can be seen from the minutes of the Executive Committee of the Aussiger Verein dated 2.7.10.1932, at whose meeting the President of the Aussige Jaroslav Preiss and the head of the Solvay headquarters in Vienna, E. Lefevre, the Czechoslovakian company was far from being an equal partner.40 Solvay and ICI had, on the contrary, decided not to pass on details of a technical nature concerning soda production to all their group companies. In October 1932 Solvay informed the Aussig Association that ICI did not agree to pass on technical experience from ICI, which was to apply to Solvay factories, to the Association in Aussig, because the Association would have an indirect benefit from this. Only the Association's delegation in the Vienna headquarters of the Central and South-Eastern European soda factories was to receive information about production, while the A In this sense, the partnership agreement of 192.3 concluded between Solvay and the Aussiger Verein was also amended41•

• GW Stocking and MW Watkins, op. cit., p. 432. •• SÜA-

AI-SY-25. u SUA-

AI-SY-5 5, interest agreement of October 26, 1932.
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All efforts by the Aussig Association to gain a more influential position in the management of the joint soda factories in the successor states were unsuccessful.
According to the original agreement between Solvay and the Aussiger Verein of 1923, a delegation of three representatives from each of the two companies took over the internal management of all joint companies and plants in the Czechoslovak Republic, Austria, Romania and Yugoslavia. All group plants received technical, administrative and commercial directives from the central office set up in Vienna, which was to have a director alternately from Solvay and the Aussiger Verein, but which was headed from the outset by an "administreur" appointed by Solvay.'2• Despite repeated attempts, the Aussiger Verein never succeeded in sending a leading Czechoslovak representative to the Vienna headquarters in place of the Belgian one, nor did it succeed in moving the headquarters itself from Vienna to Prague.

In the same way, the Aussig management was unable to get any of its directors to head the joint Czechoslovak soda factory in Nestemice (Nestomitz), which remained in the hands of a Solvay representative for the entire duration43• Additional cartel agreements regulated the production and sale of soda and soda products in the territory of the former Habsburg monarchy in accordance with the capital and patent relations of the two partners, whereby the main aim was to preserve the contracting parties' exclusive right to sales, to maintain the ban on building new soda factories or participating in them, and to prevent any kind of competition."

The emerging German competition, especially after 1926, led to defensive maneuvers by Solvay and the Association and to mutual price undercutting in some soda products. The competition in sodium peroxide finally resulted in a cartel agreement between CIBA (Society for Chemical Industry in Basel, which represented Solvay) and the Aussiger Association on the one hand and the German Gold and Silver Refinery on the other; in this agreement, the Association and CIBA left the sale of their sodium peroxide export quota to the refinery, with the exception of sales in Czechoslovakia, Austria, Hungary, Yugoslavia and Romania, and the sales policy was to be coordinated with gradually lowering the price level of sodium peroxide and other bleaching products.

"IX. The various factories mentioned will send Solvay & Cie. and Aussig regular reports concerning production and production costs, using the forms used in their own factories."

New version commissioned by Solvay:
"IX. The various factories mentioned will send Solvay & Cie. regular reports concerning production and production costs, using the forms used by their own factories.
Furthermore, Aussig will receive regular reports of a commercial nature, according to the attached schedule. However, the association will not be entitled to receive information about the special equipment provided by Solvay & Ue.
and its functioning.« u SUA-AI-SY-25 .

., Ibid.

" SÜA-KR, 228, 223.

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heights". Similar conditions were imposed on the Aussig Association by the refinery when it joined the Sodium Perborate Convention at about the same time. Austria, Hungary, Romania and Yugoslavia were mentioned in the cartel agreement as permitted sales areas for the Association, but Czechoslovakia was mentioned as the only market protection area excluding the Convention members". In a supplementary agreement dated April 1, 1935, **the Ústí nad Labem Association retained the Czechoslovak domestic market, but sales in Austria, Hungary, Romania and Yugoslavia were divided between Ústí nad Labem and the Sodium Perborate Convention** in a ratio of *50:50,* **and in Poland 35** *:6547* **• While the German Gold and Silver Refinery represented the International Sodium Perborate Convention in Central and Southeastern Europe, IG Farben regulated the policy of the International Bichromate Convention in this territory, which granted the Nestemitz Solvay Works - the joint company of Solvay and the Ústí nad Labem Association - the entire LSR requirement for potassium and sodium bichromate, as well as the right to deliver up to** 100 **tons annually to the areas of the former Austro-Hungarian Monarchy at convention prices and conditions, but at the same time blocked them from all other export opportunities•. It can be seen from the content of the cartel agreements on alkalis that the capital connection with Solvay strengthened the competitiveness of the Czecho-Slovakian plants in soda production on the south-eastern European markets relative to the competition from the German chemical industry. There can also be little doubt that Czechoslovakia and the south-eastern European countries provided an important field for the competition between the powerful chemical concerns and cartels. The history of French and British interests in Czechoslovakian chemistry also confirms this.**

French and British capital only appeared in the chemical industry of Czechoslovakia after the First World War, when the explosives company Explosia was founded in Semtin in 1921. **The Czechoslovak state transferred its monopoly on the production of explosives for industrial and military purposes to this company. A Czechoslovak banking group led by the Zivnostenska bmka, Nobel Industries Ltd., London, the Societe Centrale de Dynamite, Paris, and AG Dynamit, Vienna, all of whom participated in the share capital of Explosia.11• In 1923, the Vienna company had to** transfer **its Czechoslovak interests to the U6lstinna spolofoost Dynamit Nobel company in Bratislava as a result of the nostrification.50•**

u **SÜ.A-KR, 226, 18. and 23. 10. 1933.**

u **SÜ.A-KR, 2.30/1.**

u **SÜA-KR, 230/4, 1. 4. 1935-31.** 1 2. **1939.**

u **SÜA-KR, 620/1,** 1 7. **1. 19H-1939· ..**

At the head of the banks was *the* leading Czechoslovak commercial bank, the Zivnostenska banka. The share of the Czechoslovak shareholders was 52.3% and the share of the foreign shareholders was 48.0%, which was divided 16.3% each between the English and French companies and Dynamit Nobel AG in Vienna. See PA-VCHZ - l'led. Expl. *9* (PA-VCHZ = Podnikovy archiv Vychodoceskych chemickych zavodu = factory archive of the East Bohemian chemical works).

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Before the First World War, Nobel Industries Ltd. (London) and AG Dynamit Nobel (Vienna) belonged to a single trust founded by A. Nobel in 1886 , **which fell apart as a result of the war. In Germany, Dynamit AG (DAG) was founded, which later became part of the IG Farben sphere of interests. The Societe Centrale de Dynamite also apparently originally belonged to the Nobel Trust61. In the 1920s, DAG began to compete fiercely on the markets that the British Nobel Industries and the American duPont had divided up in a cartel. As a result, DAG was asked by them to join the cartel. As a further consequence, Nobel Industries and duPont appear to have acquired shares in DAG. In 1934, duPont's share in DAG (which was already part of the IG Farben Group at that time) was given as** 8 **% and that of ICI, the successor to Nobel Industries Ltd., as 12.5%. 62• What prompted IG Farben to give shares in DAG to its British and American competitors is still unclear.**

Perhaps this is related to the fact that the Treaty of Versailles prohibited German companies from exporting explosives for military purposes, and that both Nobel Industries and duPont knew that IG Farben was constantly violating this ban. The German chemical company undoubtedly expected to gain advantages from a closer relationship with British and American capital. In any case, there is a hint from a leading figure in Nobel Industries, H. McGowan that the German works had undertaken not to compete in any of the British markets for five years and to refrain from any intervention which might endanger the interests of Nobel Industries in South-Eastern Europe.63 Under these circumstances, ICI concluded a series of cartel agreements with duPont between 1926 and 1932 on **the sale of explosives for military purposes, from which it is clear that Central and South-Eastern Europe - the traditional market for Nobel - remained within ICI's sphere of interest. A special agreement was made on Czechoslovakia64 in consideration of ICI's direct participation in Explosia, which had doubled since 1923. In 1931, ICI had acquired the Bratislava Dynamit Nobel Company's share in Explosia and thus held one third of the share capital in the Czechoslovakian explosives monopoly.66 Since the German DAG owned a decisive share in the capital of AG Dynamit Nobel in Bratislava, it seems likely that this transfer of capital from German to British hands was a result of the international cartel agreements on the division of spheres of interest in the explosives industry. These mutual relationships show how interests in capital participation are linked to cartels.**

ao Uatstinnä spolocnost Dynamite Nobel, Bratislava; cf. Compass, Cechoslovakia, 1929, p. 937.

11 The Billions of Consolations in France, Berlin l9H, p. 139.

51 Here I rely on the information in Stocking and Watkins, op. cit.

11 Ibid.

" See E. Hexner, ibid., p. 3p-3S2, 11

PA-VQ-IZ - :Red. Expl. 9.

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The large number of different chemicals and chemical products whose production, prices and sales markets were regulated by international cartels, and especially the extremely complicated interrelationships of the cartel agreement provisions, make it extremely difficult to statistically record the relative impact of the international chemical cartels on the national economy of Czechoslovakia.

I was able to determine the most tangible effect of international cartel conditions on the foreign trade statistics of chemical products in the *Czech Republic* . In my research work, I examined the foreign trade movement of all chemical products that appeared in international cartel agreements, as far as they are included in the official foreign trade statistics of the *Czech Republic* from 1925 to 1937. In total, this comparison concerned 35 groups of chemical products. A detailed analysis of the cartel agreement conditions and the dates of the conclusion of the agreements was undertaken, as well as the direction, quantity and price movement of the cartelized chemical products in the foreign trade of Czechoslovakia. In addition, the statistics of each product, especially exports from the Czech Republic, were compared in the period before the cartel agreements were concluded and during the validity of the cartel agreements. Since almost all cartel agreements were continuously renewed up to the outbreak of the Second World War and many even after that, no comparison could be made with the period after the expiration of the agreements. The results of this study clearly show that international cartels have a decisive and extremely effective influence on foreign trade

of *CSR* in chemical products. There is a great deal of evidence to support this claim. However, I would be overloading my explanations with monotonous repetition of the same phenomena, because the foreign trade statistics of *CSR* in cartelized chemical products in any case offer an almost exact reflection of the provisions agreed in the individual cartel agreements. For this reason, I will only cite a few statistical tables, which are by no means random examples, but rather represent indicative research results.

Above all, some international cartel agreements resulted in the complete or almost complete cessation of Czechoslovak foreign trade in the contract products. This situation is most clearly shown in Table No. 4 , when Czechoslovak exports were curbed after the *Czechoslovak Republic* joined the Hydrogen Peroxide Convention in 1 930. Before the cartel agreement was concluded, Czechoslovak hydrogen peroxide production and exports were low and Czechoslovak producers wanted to increase them when the cartel intervened; at the same time, however, Austrian and German imports of the product into the *Czechoslovak Republic* were maintained in accordance with the cartel conditions66• After Czechoslovak chemical plants joined the International Nitrogen Cartel under the leadership of the DEN Group, exports of a whole range of nitrogen products from the *Czechoslovak Republic dried up.* Table No. 5 shows the impact of this international cartel on one of the nitrogen products, ammonium sulphate, after 1932, ie after the signing of the cartel agreement. The export volume fell significantly, but

51 SÜA-KR, 180 and Zah.tanitn.f obchod Republiky leskoslovenske (Foreign Trade of the CSR), 192J-1938.

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the number of countries to which Czechoslovakia had exported ammonium sulphate was also reduced to just two, Yugoslavia and Romania.67 Another part of the international cartels attempted

to regulate and restrict Czechoslovak exports. In Tables Nos. 6, 7 and 8, I show the effect of the 1933 cartel agreements between the Aussig Verein and the Berlin Cartel Headquarters on sulphates. The export headings from 19 3 3-19 3 7 show an obvious restriction, such as in the export of potassium sulphate (Table No. 6), or the restriction to certain regions in the export of potassium sulphate (Table No. 7) and sodium sulphate (Table No. 8) 68.

Finally, the study of the prices of cartelized products shows in all cases their relative stability, especially in years of crisis. Here, the general influence of cartels on price stability is reflected in the fact that cartels defend themselves against price reductions with production restrictions, price lists and market divisions. The prices of the cartel products analyzed here are higher than those of non-cartelized products. Cartel prices were rarely reduced (in the cartel agreements I examined, I did not come across a single case of price reduction), but price increases were often the subject of cartel agreements concluded in the chemical industry.

The largest number and the strongest influence of the cartels can be observed, as was to be expected, in the crisis years 1930-1933 . However, the continuous and effective compliance with the agreed cartel provisions throughout the period under review from 1926 to 1938 is remarkable. These generally required the Czechoslovak chemical industry to close down operations, prohibited it from producing specified chemical products, built new plants or carried out plant expansions and modernizations, and imposed significant restrictions on production volumes, division of sales markets and export bans. The same applies to the actions of the Czechoslovak chemical companies in cartel agreements with their economically weaker partners in the chemical industry of the south-eastern European countries, insofar as they managed to maintain their leading role and retain at least part of their traditional areas of influence and sales.

There can be little doubt that international cartels directly influenced the production, technology and foreign trade of the chemical industry in Czechoslovakia.

17 SÜA-KR, 246 and Zahranicnl obchod Republiky a:skoslovenskt, 1925-1938.

11 SUA-KR, 349 and Zahranicni obchod Republiky ccskoslovenski, 1925-1938. This cartel agreement (KR 349) is linked to a whole series of other agreements on the division of the Czechoslovak market between the contracting parties, on exports to southeastern Europe, on the obligation to pay the Czechoslovak side a high percentage of the profits achieved as a penalty if the Czechoslovak factories exceed their export quota or deliver to "forbidden areas". In connection with this, I have examined the following group of sulfates: potassium sulfate, potassium bisulfate, sodium sulfate, sodium bisulfate, calcium sulfate, magnesium sulfate, aluminum sulfate, nickel sulfate, lead sulfate.

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TABLES FOR THE ARTICLE

ALICE TEICHOVA

INTERNATIONAL CARTELS

AND THE

CHEMICAL INDUSTRY

DER VORMÜNCHNER

CZECHOSLOVAKIA

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Plate No. 4

The Foreign Trade of the C:SR - Chemical Products (192.1-1930)

Cartel No. KR 180 concluded in 1930

destination	1925		1926		1927		1928		1929		1930	
and	Crowd	1000	Crowd	1000	Crowd	1000	Crowd	1000	Crowd	1000	Crowd	1000
country of origin	q	Kc	q	Kc	q	Kc	q	Kc	q	Kc	q	Kc
total exports			6	11			12	12	5	5	10	2
Germany			6	11								
Austria							1 q	Kc	5	5		
Price								1000				
total imports	1339	1897	1135	1264	1,129	1181	1486	1565	1369	1664	1752	1983
Austria	889	1314	815	965	1039	1070	1001	1021	789	948	898	975
Germany	450	583	295	376	86	105	462	518	446	554	841	992
Japan												
Great Britain			16	20	4	6						
France			9	3			3	2				
Italy							20	24	125	151	13	16
Switzerland												
Other states	1 q	Kc	1 q	Kc	1 q	Kc	1 q	Kc	1 q	Kc	1 q	Kc
Price		1417		1202		1046		1097		1215		1132

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Foreign Trade of the CSR - Chemical Products (1 931-1 937)

Cartel No. KR 1 80 concluded in 1930

destination and country of origin	1931		1932		1933		1934		1935		1936		1937	
	Crowd q	1000 Kc	quantity q	1000 Kc	quantity q	1000 Kc	quantity q	1000 Kc	quantity q	1000 Kc	Crowd q	1000 Kc	quantity q	1000 Kc
total exports	---	..		-			2	2 -		-	-	..		-
Germany														
Austria														
Price														
Total imports 2066 **Austria** 899		2156 j 1840		1917 1795		2002 3204		2932	241	265	201	224 288		319
		925 j 833		916 1042		1146 1960		1808	194	208	101	1 10	148	156
Germany	993	1009 j 1007		1001	708	803 1155		1044	47	57	100	1 14	100	117
Japan		1											40	46
Great Britain														
France														
Italy	174	222												
Switzerland					**45**	53	89	**80**						
Other states														
	1 **q**	Kc	1 **q**	Kc	**tq**	Kc 1 **q**		Kc	1 **q**	Kc	1 **q**	Kc	1 **q**	Kc
Price		1044		1042		1115		915		1,100		1114		1,108

Since 1 938 customs rate 360 Kc per 1q - contractually 1 80 Kc per 1q

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Plate No. 1

Foreign Trade of the CSR - Chemical Products (192 5-1930)

ammonium sulfate

Cartel No. KR 246, concluded in 1932

destination and country of origin	1925 Crowd q	1925 1000 Kt	1926 Crowd q	1926 1000 Kt	1927 Crowd q	1927 1000 Kt	1928 Crowd q	1928 1000 Kt	1929 Crowd q	1929 1000 Kt	1930 Crowd q	1930 1000 Kt
Spain	21			13005	3244			5025	233401		163,576	23009
Total exports	1	1	6	1	77535	1	530	1	28657	326	148469	28495
Lithuania											25370	3676
Germany					2,190			4489	9861		281	39
British India			43737	1	7212	1	1	25805	1	29994	5144	11010	1,684
Switzerland												
Hamburg			28066	4807			2182	420			52751	6900
Great Britain									21,612	3026	9260	1,130
Romanian									67	16	473	64
Italy			4101	760							46347	7,164
Japan					650	133			6638	981		
Sweden											13420	1,731
Hungary			1,329	184					54	14	1	1400	178
Dutch colonies in Asia									3706	624		
Austria			295	37	400	70	500	86	1	402	62	1	2161	298
Bulgaria			6	5			166	29				
Mexico												
Poland			1	-	4	1	4	1	8050	1,043		
Irish Free State									1,524	293		
Yugoslavia											1	1,100	141

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British												
colonies in Asia									**1,524**	**216**		
US:									**1,500**	**250**		
Türkiye												
Greece												
Other states											**13**	**4**
	lq	*Kt*	lq	*Kt*	tq	***Kt***	lq	*Kt*	lq	*Kt*	lq	***Kt***
Price		**260**		**168**		**163**		**175**		**154**		**141**
total imports	**165227**	**30044**	**80420**	**13519**	**26681**	**4200**	**11,080**	**1,702**	**13354**	**1,556**	**1,211**	**219**
Germany	**137 109**	**25278**	**53868**	**9033**	**19955**	**3253**	**7340**	**1,217**	**5978**	**947**	**1,211**	**219**
Poland	**26025**	**4405**	**25639**	**4319**	**6625**	**928**	**3430**	**438**	**5366**	**607**		
Romania	**895**	**146**										
Austria	**606**	**105**	**760**	**143**	**101**	**19**						
Hungary	**493**	**94**										
France	**100**	**17**					**10**	1	**10**	**2**		
Great Britain			**3**	**1**			**300**	**46**				
USA			**150**	**23**								
Other states												
	lq	*Kt*	lq	*Kt*	lq	*Kt*	lq	*Kt*	lq	*Kt*	lq	***Kt***
Price		**182**		**168**		**157**		**153**		**137**		**181**

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Plate No. J

The Foreign Trade of the C:SR - Chemical Products (193 1-1937)

ammonium sulfate

Cartel No. KR 246, concluded in 1932

destination and country of origin	1931 Crowd q	1931 1000 Kc	1932 Crowd q	1932 1000 Kc	1933 quantity q	1933 1000 Kt	1934 quantity q	1934 1000 Kt	1935 quantity q	1935 1000 Kt	1936 Crowd q	1936 1000 Kt	1937 quantity q	1937 1000 Kt
total exports	38707	5025	18069	2633	2 946	291	4053	339	2010	165	1,320	1 15	41 871	3,379
Spain	9000	1,184	13027	2,160										
Lithuania					5	-			10	1				
Germany	5969	795	3047	279										
British India									so	8			1	-
Switzerland	2271	307												
Hamburg	16331	2094												
Great Britain														
Romania	450	49	1,150	106	1 499	125	2889	207	1 050	74	450	46	800	76
Italy	100	8											40,000	3206
Japan	1,500	225												
Sweden														
Hungary														
Dutch colonies in Asia														
Austria	2100	249			1,082	124	417	56	100	12			300	36
Bulgaria														
Mexico						60	10							
Poland														
Irish Free State														
Yugoslavia	986	114	845	78,300		32	619	57	800	70	870	69	770	61

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British														
colonies in Asia														
USA														
Türkiye							75	**11**						
Greece							19	**3**						
Other states							24	5						
	tq	**Kc**	lq	**Kc**	1q	**Kc** tq		**Kc**						
Price		**130**		145		99		84						
total imports	40	19	90	33	56	34	12	**11***	4	3	6	s•	**3**	3
Germany	37	19	88	33	56	**34**			4	3			3	**3**
Poland														
Romania														
Austria														
Hungary														
France			2	--										
Great Britain														
USA														
Other states	**3**	-												
	lq	**Kc**	1q	**Kc**	1q	**Kc**								
Price		475		367		607								

*** Country of origin not specified** **Since** 1930 **customs rate lq =** 21.80 **Kc increased to** lq = 7\ **Kc,** 15. 7. 1933 **reduced to** lq = 60 Kc

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Plate No. 6

Sulfates: Acid sulfuric acid

Potassium (potassium bisulfate)

The Foreign Trade of the CSR - Chemical Products (1925 -1930)

Cartel No. KR 349, concluded in 1933

destination	1925		1926		**1927**		**1928**		**1929**		**1930**	
and	**Crowd**	1000	**Crowd**	1000	**Crowd**	1000	**Crowd**	1000	**Crowd**	1000	**Crowd**	1000
country of origin	**q**	Kc	**q**	Kc	q	Kc	q	Kc	**q**	Kc	q	Kc
total exports	601	**99**	451	76	454	80	5	1	409	50	156	24
Poland	150	27	150	27	150	27			150	26	150	**23**
Switzerland	150	27	300	49	**300**	52						
Yugoslavia												
Germany									253	**23**		
Austria			1	-	4	1	5	1	6	1		
Great Britain	300	45										
Other states											6	1
	1 q	Kc	1 q	Kc	1q	Kc			1 q	Kc	1 q	Kc
Price		164		168		176				122		154
total imports	**1**	**1**	8	2	5	4	1	1	6	4	5	7
Germany			8	2	5	4	1	1	6	4	5	7
Switzerland												
Other states												
	1 q	Kc	1 q	Kc	1 q	Kc						
Price		645		250		**800**						

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Sulfates: Acid sulfuric acid

Potassium (potassium bisulfate)

The Foreign Trade of the CSR - Chemical Products (1931-19n)

Cartel No. KR 349, concluded in 1933

destination and country of origin	1931 Crowd q	1931 1000 quantity Kt	1932 1 q	1932 1000 quantity Kt	1933 q	1933 1000 quantity Kt	1934 q	1934 1000 quantity Kt	1935 q	1935 1000 Kt	1936 Crowd q	1936 1000 quantity Kt	1937 q	1937 1000 *Kt*
Total exports	-	150		27	-	151		26	1	-	-	--		-
Poland									1	-				
Switzerland			149	27			148	25						
Yugoslavia							3	1						
Germany			1	-										
Austria														
Great Britain														
Other states														
			1 q	Kt			1 q	Kt						
Price				180				172						
total imports	30	7	3	1•	100	10	56	13	7	6	19	13	14	9
Germany	30	7					51	8	7	6	19	13	11	7
Switzerland							5	5						
Other states														
							1 q	Kt	1 q	Kt	1 q	Kt		
Price								232		-		684	3	2

• Country of origin not specified **customs rate = 17 Kt**

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Table No. 7

Sulfates: Potassium sulfate with more than So¾ potassium sulfuric acid content - (fertilizer)

Foreign Trade of the CSR - Chemical Products (192.5 -1937)

Cartel No. KR 349 concluded in 1933

destination and country of origin	1925 Crowd q	1925 1000 Kc	1926 Crowd q	1926 1000 *Kt*	1927 Crowd q	1927 1000 Kc	1928 Crowd q	1928 1000 *Kt*	1929 Crowd q	1929 1000 *Kt*	1930 Crowd q	1930 1000 *Kt*
total exports	3438	494	2429	355	3611	590	6907	1146	4831	762	8169	1310
Netherlands					1770	286	1699	269			3001	495
Poland	450	81	600	98	450	74	750	136	450	77	450	77
Germany					150	17	150	28	505	63		
Austria	266	14	2	-	1	1	602	87	1875	278	1174	172
Switzerland	**800**	127	600	100	900	159	1200	220	1500	274	1350	251
Japan			153	28	100	15						
Yugoslavia							5	1			2	1
Greece					150	27						
Italy											350	64
Hamburg	1042	154	802	95			2501	405	400	56	1725	234
Hungary	479	68	167	23	90	11					16	3
USA	**400**	50	102	10					101	14	101	**13**
Romania			3	1								
Other states												
	1q	*Kt*	1q	*Kt*	1q	*Kt*	1q	***Kt***	1q	*Kt*	1q	***Kt***
Price		146		146		163		166		158		155
fertilizers												
total imports	277	46	164	25	166	26	101	25	182	37	174	44
fertilizers												
Germany	277	46	164	25	166	26	101	25	182	37	174	44
Great Britain												
Switzerland												
fertilizers												
Poland												
fertilizers												
	1q	*Kt*	1q	*Kt*	1q	*Kt*	1q	Kc	1q	Kc	1q	Kc
Price		165		152		157		248		204		253

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(1931-1937)

destination and	1931		1932		1933		1934		1935		1936		1937	
	Crowd	1000 j **quantity**		1000 **quantity**		1000 **quantity**		1000 **quantity**		1000 **quantity**		1000 **quantity**		1000
country of origin	q	Kc 1	q	*Kt*	q	Kc	q	Kc	q	*Kt*	q	*Kt*	q	Kc
total exports	7293			1008 3203		550 2412		427 3370		452 5250		631 5701		873
Netherlands		1127 1 6452												
Poland	600	99	596	99	148	26	**502**	94	1081	122 3931		459 3797		597
Germany	1019	133												
Austria	9:15	120	800	112	300	41	307	42	253	33	870	110	560	**98**
Switzerland	1600	289 1040		186 1487		266 1 193		211 1935		282	449	62 **1344**		178
Japan														
Yugoslavia							101	16	101	15				
Greece														
Italy	1200	225	747	i34	900	157	297	59						
Hamburg	1175	170	247	35										
Hungary	5	1												
USA	759	90 3022		**440**	368	60								
Rwnänien														
Other Cities							12	5						
	lq	Kc	1q	Kc	1q	Kc lq 172		Kc	lq	Kc	lq	Kc	lq	**Kc**
Price		160		156				177		134		120		153
fertilizer					200	27 2921		319 5027		569 3821		467	6365	622
total imports	203	37	289	49	67	12	111	19	20	11	135	25	179	**35**
fertilizers					200	27 2821		312 5027		569 3821		467 6365		**622**
Germany	203	37	289	49	67	12	111	19	**13**	6	125	19	163	26
Great Britain									3	2	10	6	16	9
Switzerland									4	3				
fertilizers							100	7						
Poland														
					1q	Kc	1q	Kc	lq	Kc	lq	Kc	lq	**Kc**
fertilizer						**135**		**109**		**113**		122		**98**
	1q	Kc	1q	Kc	1q	*Kt*	1q	Kc			1q	Kc	1q	**Kc**
Price		**182**		170		179		171				185		196

Tariff rate2 1q = 57 **Kc, fertilizer duty-free**

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Plate No. 8

Sulfates : Acid sulfuric acid sodium (sodium bisulfate)

The Foreign Trade of the *CSR* - Chemical Products (191,-1930)

Cartel No. KR 349 concluded in 1933

destination and country of origin	1925		1926		1927		1928		1929		1930	
	Crowd q	1000 *Kt*	Crowd q	1000 *Kt*	Crowd q	1000 *Kt*	Crowd q	1000 *Kt*	Crowd q	1000 *Kt*	Crowd q	1000 *Kt*
total exports	9156	522	20768	877	17783	824	15859	731	5314	236	5860	238
Yugoslavia					9	4						
Bulgaria												
Austria	6514	398	8058	394	7,158	329	6276	288	3011	125	2478	108
Romania					2	1	221	12	1147	60	366	16
Germany	2584	121	12554	475	10456	480	8456	382	406	18	1896	70
Hungary	57	3	156	8					104	4	456	19
Poland					155	10	800	43	646	29	664	25
Persia and Afghanistan												
Other states							106	6				
	1 q	*Kt*	lq	*Kt*	1 q	*Kt*	1q	*Kt*	1 q	*Kt*	1 q	*Kt*
Price		57		42		46.35		46.10		44.40		40.60
total imports -		-	1	1	9	3	14	8	4	2	176	7
Germany			1	1	9	3	14	8	4	2	176	7
Poland												
											lq	*Kt*
Price												39.75

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Foreign Trade of the <'.:SR - Chemical Products (1931-1937)

Cartel No. KR 349 concluded in 1933

destination	1931		1932		1933		1934		193S		1936		1937	
and	Crowd	1000	Crowd	1000	quantity	1000	quantity	1000	quantity	1000	Crowd	1000	quantity	1000
country of origin	q	Kt	q	Kt	q	*Kt*	q	Kt	q	*Kt*	q	Kt	q	*Kt*
total exports	732	31	1571	64	4556	190	5235	**213**	2210	**106**	1702	**82**	1032	**42**
Yugoslavia														
Bulgaria					1180	68	129	9	714	**45**	932	62	476	27
Austria	454	19	1027	38	**513**	14	707	19	611	17	770	20	457	**12**
Romania			440	**21**	274	15	!173	55	**724**	37	-	-	**99**	3
Germany					2588	91	3217	129	152	6				
Hungary	278	12	103	5										
Poland			1	-			9	1	9	1				
Persia and Afghanistan					1	2								
Other mares														
	1q	*Kt*	1 q	Kt	1 q	*Kt*	1q	*Kt*	1q	*Kt*	1q	*Kt*	1q	*Kt*
Price		42.35		40.75		41.70		40.70		**47.95**		**48.15**		40.70
total imports	330	15	2	1	1	1	1	1	3	2•	**1**	1	**1**	1
Germany	3	2	2	1	1	1	1	1			1	1	1	1
Poland	327	**13**												
	1 q	Kt												
Price		**45.45**												

•) Country of origin not specified Zolhatz 1 q. 19 Kt

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